ITEM 163
FY90
CEL-DS1
December 7, 1988

PURCHASE DESCRIPTION

MICROWAVE SWEEP GENERATOR (10 MHz to 26.5 GHz)

GE1RX-B

1.0 GENERAL These salient characteristics describe a microwave sweep generator covering a frequency range of 10 MHz to 26.5 GHz employing no more than one plug-in and one mainframe.

2.0 CLASSIFICATION The sweep generator described herein shall meet the requirements of MIL-T28800D, Type III, Class 5, Style E, Color R for Navy shipboard, submarine and shore applications with the following modifications and exceptions:

a. Non-operating temperature: -40°C to +70°C

b. Temperature/humidity: Non-condensating

c. Altitude: Not required

d. EMI requirements: Not required

e. 400 Hz Power Source: Not required

f. The equipment warm-up period is increased to 1 hour.

3.0 OPERATIONAL CHARACTERISTICS

3.1 Frequency Characteristics

3.1.1 Frequency Range: 10 MHz to 26.5 GHz; a maximum of one plug-in or RF output is allowed.

3.1.2 Frequency Resolution: The displayed frequency resolution shall be at least 1 MHz.

3.1.3 Frequency Accuracy: In CW mode, measured accuracy within ±20 MHz at 25°C ±5°C

3.1.4 Frequency Stability (less than the limits specified below)

3.1.4.1 Temperature: ±1 MHz/°C (over 0-50°C operating range)
3.1.4.2 Line Voltage: ±200 kHz (±10% line voltage variation about 115 Vac)
3.1.4.3 Warm-up: ±1 MHz/10 minutes after 1 hour warm-up

3.1.5 Residual FM in CW Mode: Less than 15 kHz peak (measured in 50 Hz to 15 kHz bandwidth)

3.1.6 Spectral Purity (at least the limits specified below)

3.1.6.1 Harmonics/Sub-harmonics: -20 dBc
3.1.6.2 Spurious/Non-harmonics: At least -25 dBc for frequencies from 10 MHz to 2.4 GHz and at least -50 dBc for frquencies from 2.4 to 26.5 GHz.

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3.2 Output Characteristics

3.2.1 Output Connector: Ruggedized coaxail (SMA compatible); VSWR less than 2.0:1

3.2.2 Maximum Leveled Output: At least +7 dBm for frequencies from 10 MHz to 18 GHz and +1 dBm for frequencies from 18 to 26 GHz

3.2.3 Output Level Adjustment Range: At least 55 dB

3.2.4 Output Display: Digital readout of output power level ; resolution 0.1 dB

3.2.5 Level Accuracy: ±2.0 dB (displayed level vs measured output level)

3.2.6 Output Level Variation: ±1.5 dB

3.2.7 Attenuator Error: Maximum attenuator error shall be less than ±3.3 dB.

3.3 Modulation Characteristics

3.3.1 Amplitude Modulation (AM)

3.3.1.1 Internal AM (square wave)
3.3.1.1.1 Rate: 1 kHz and 27.8 kHz
3.3.1.1.2 On/Off Ratio: Greater than 30 dB
3.3.1.2 External AM (square wave or pulse)
3.3.1.2.1 Rate: 10 Hz to 50 kHz
3.3.1.2.2 Input Levels: TTL compatible
3.3.1.2.3 Sensitivity: 1 dB/V, maximum input 15V

3.3.2 Frequency Modulation (FM)

3.3.2.1 External FM
3.3.2.1.1 Deviation: At least 0 to ±7 MHz
3.3.2.1.2 Rate: At least 10 Hz to 100 kHz
3.3.2.1.3 Sensitivity: Greater than 5 MHz/V

3.4 Sweep Characteristics

3.4.1 Range: 10 MHz to 26.5 GHz

3.4.2 Sweep Function: Start/Stop, CW, ΔF, Marker

3.4.3 Trigger Modes: Internal (automatic), Line, External, Single

3.4.4 Frequency Markers: At least 5; both amplitude and frequency

3.4.5 Sweep Output: 0 to 10 V ±0.5 V, direct coupled, coincident with the swept RF output

3.4.6 Sweep Time: Adjustable from at least 10 msec to 33.5 sec over any portion of the band

3.5 Displays (digital)

3.5.1 Frequency: Start/Stop, CW, CF/ΔF (4 digits minimum)

3.5.2 Marker/Time: Marker frequency or sweep time (3 digits minimum)

3.5.3 Output Level: Output signal level in dBm (3 digits minimum)

4.0 GENERAL REQUIREMENTS

4.1 Dimensions: Less than 36,052 cubic cm (2200 cubic in); maximum height allowable 153 mm (6 in) including feet

4.2 Weight: Less than 27.3 kg (60 lbs)

4.3 Power: 115 or 230 Vac ±10%, 50/60 Hz, 400 W maximum

4.4 Local Operation: All front panel control settings shall be storable in non-volatile memory for future recall.

4.5 Remote Contol: Instrument must be capable of operating via the IEEE-488 interface bus and shall provide the capability to talk and listen.

4.6 Diagnostics: Functional self-test and trouble shooting shall be accomplished using front panel controlled diagnostic functions.

4.7 Rack Mountable

4.8 Calibration Interval: After calibration the equipment shall meet each performance requirement within the specified tolerances for a period of at least 12 months.